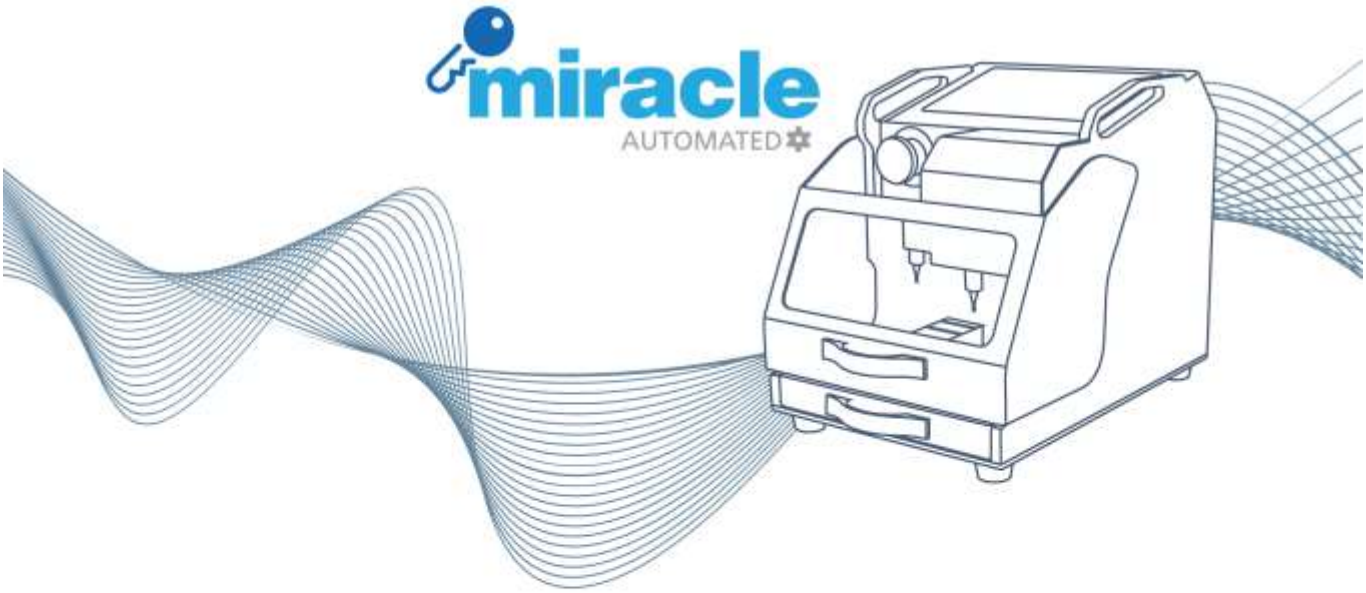
MIRACLE-A9

Instruction Manual

- Please read the manual before operating this equipment without fail
- The appearance and performance of this product is subject to change without prior notice for usability improvement, and there may be parts not homologous with the manual



redt
RED TECHNOLOGY
http://www.miraclekey.com

Miracle-A9

User Manual

*Make sure to read the User Manual before using this machine.

*The product appearance and specifications are subject to change for performance and usability improvement without an announcement, and some parts may be unmatched with the picture shown in the User Manual.

http://www.miraclekey.com
3F, 1314 GwanPyeong-dong Yuseong-gu
Daejeon, Republic of Korea, 306-801
TEL:+82-70-7011-0905 FAX: +82-42-673-0905
Copyright© 2005-2012 RED TECHNOLOGY.

Table of Contents

- **Cautions** 2
  - Power
  - Installation
  - Use
  - Other Cautions
- **Parts** 6
- **Parts Name** 7
- **Power** 9
- **Specification** 10
- **Replacement of Consumables** 11
  - Cutter
  - Probe
  - Belt
  - Clamp
- **Key Fixation** 15
- **Auxiliary Clamp** 20
- **Standard Menu** 21
- **Convenient Function** 24
- **Setting Menu** 26
- **Clamp calibration** 27
- **Clamp Reference Point Change** 29
- **Key Manufacturing Order** 30
- **Program and Data Upgrade** 33
- **Key Data Read by Barcode Scanner** 34
- **Decoding and Key Copying** 36
- **Frequently Used Key Registration** 38
- **Bitting Adjust** 39
- **Key Type Description Rule of Imported Vehicles** 40

Make sure to comply with the following when you use the machine.

- ✓ **Miracle A-9 is designed to be operated under DC24V. Normal operation is only made when DC24V is supplied. When other power supply than DC24V is applied, the machine may not be operated accurately. In particular, under low voltage (less than 24V), DC motor output decreases, which leads to slower rotation.**

- ✓ **Keep the car engine turned on while using the machine connected to the cigar jack.**

- ✓ **Replace the end mill on a regular basis. Delayed replacement may deteriorate the cutting force, which leads to failure of accurate key manufacturing.**

- ✓ **Depending on the alloy of the key material, the cutting force of the end mill differs. Set the cutting speed and cutting unit by the strength of the material.**

- ✓ **Take cautions not to drop the machine or get it get wet by rain or snow when used outside.**

- ✓ **Make sure to check the error of key materials before manufacturing the key. The error of key material itself may produce unexpected results even if the cutting machine manufactures the key with accurate measurement.**

Make sure to observe the followings for safe use of the product.

- **The below information is provided to promote the user safety and prevent property loss.**
- **Read the cautions carefully for correct use.**

주의	It indicates that you may get injured or experience equipment damage if you fail to follow the instructions.
경고	It indicates that It's the sign that you can be seriously injured if you fail to follow the instructions.

■ Cautions for Power

경고	**Never use damaged power cords or loose plugs or sockets.** ➢ **They may cause electric shock or fire.**	경고	**Never plug in many power cords in an outlet simultaneously. The outlet may get too hot and cause fire.**
경고	**Never pull out the plug by tugging the power-cord, or touch the power plug.**	주의	**Keep the machine unplugged when unused for a long time.**
경고	**If smoke rises up while using the machine, turn off the power right away. Contact your dealer or our factory for advice.**	주의	**Cigar jack fuse may blow out when you connect the machine to the vehicle cigar jack. In such a case, replace the old fuse with the new fuse with 10A or more. You can only use the machine connected to the cigar jack, while the vehicle engine is running.**

■ Cautions for Installation

경고	**Do not install the machine in a place with oil, smog, moist, dust and water splashing.** ➢ **It may cause electric shock or fire.**	경고	**Do not put burning cigarettes or candles on the machine and install it away such heating apparatus such as stoves.** **The unit could get overheated, resulting in failure or fire.**
경고	**Make sure to install the main body on a stable flat surface.** **The machine weighs about 21.5Kg and generates vibration on both sides during operation. If you use the machine on a weak or bumpy surface, it may lead to damages on machine/worktable and injuries on users.**		

■ Cautions for Use

경고	➢ The blade of the machine spins at high speed during its operation. Be careful not to put any part of worker's body or clothing or other things inside of the machine. ➢ The operator may get seriously injured by the cutter if this is ignored. 	경고	Do not put any tools, water containers, mugs, cups or small metal pieces on the unit or cutting bed. ➢ Vibration of the machine and carelessness of the user may cause falling of the above objects, which leads to injuries on the user. Overheating or electric leakage may lead to fire or malfunction. ➢ It may also cause electric shock or fire when the unit gets wet.
경고	Be careful not to catch any part of your body or clothing in the route of each axis of the machine so as not to be scratched by its blade. When a part of body or object is jammed in the axis path of the machine, or gets scratched by a sharp blade, serious injuries, machine damage and failure may occur.		

■ Other Cautions

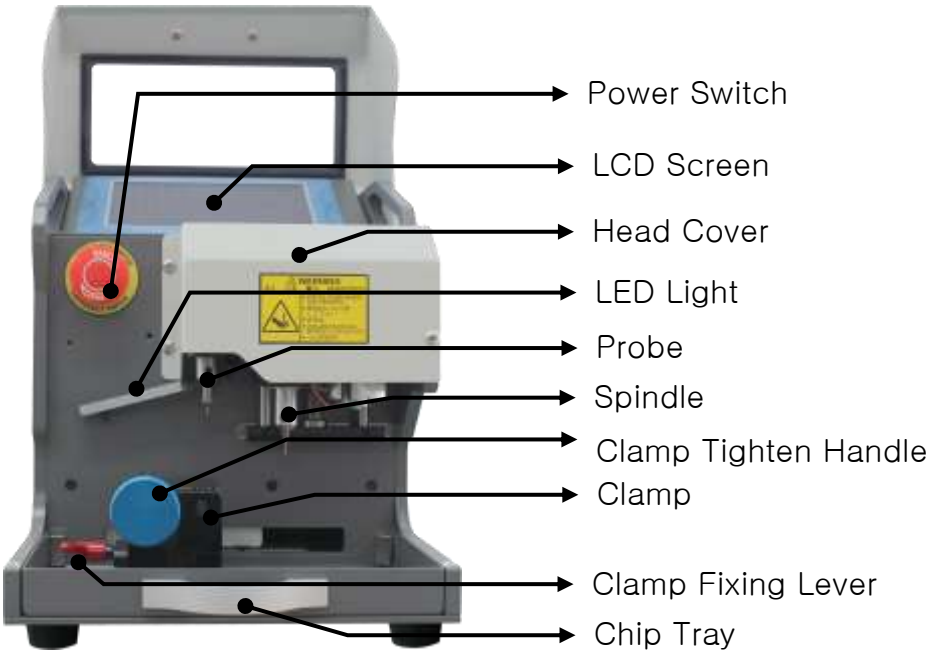
경고	Do not disassemble or remodel the body of the machine. ➢ It may cause fire, electric shock & equipment failure. If you need a check-up, adjustment, repair of the machine, please ask your dealer for service or contact our factory.	경고	Curiosity or carelessness of the young children about the machine may lead them to touch the machine and be hurt. Keep them away from the machine.
주의	In winter, sub-zero temperatures, may cause the unit to be unable to work properly. If such thing happens, increase the temperature of the work environment. Do not let the machine room temperature go below zero.		

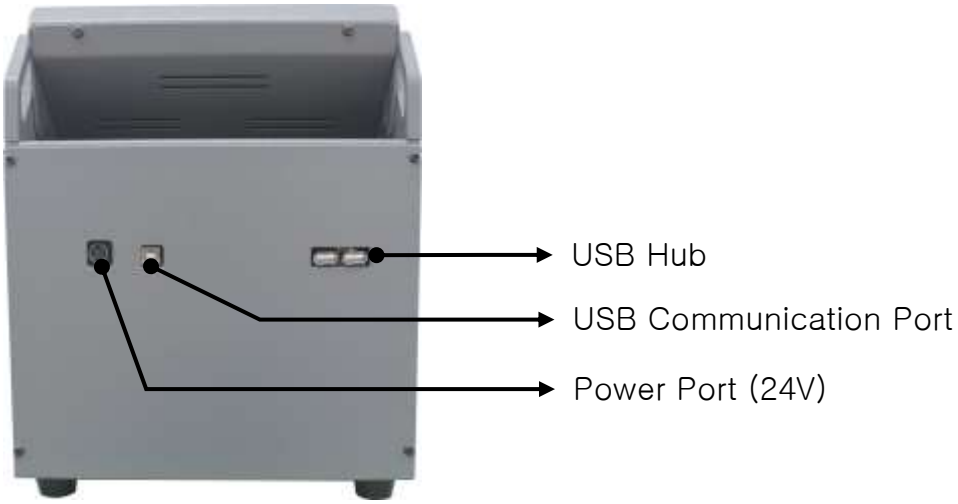
Parts

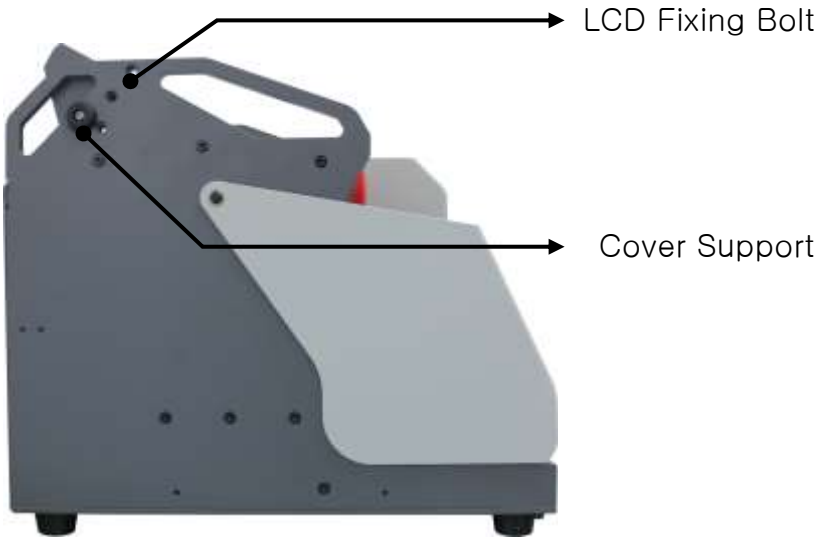
Contents	Figure	Quantity	Purpose
Cutter		2 EA	Tool for cutter **Consumables.** Make additional purchase for replacement.
Probe		2 EA	Key decoding (copying)
T Wrench		1 EA	Tool replacement
M5 Bolt		2 EA	Cutter and probe fixing
Stopper		1 EA	Key reference position guide
Stopper (Right – to – Left)		1 EA	Key reference position guide
Auxiliary Clamp Set SX9 Clamp		2 SET	Key Help fixing
24V Adaptor		1 EA	Power supply INPUT 100~240V 50/60 Hz 2.0A OUTPUT 24.0V 6.25A
Spindle Belt		6 EA	
User Manual		1 EA	Product Manual

Cutter and spindle belt are consumables. Make sure to replace it with the new parts after a certain period of use.

Parts Name


Power Switch
LCD Screen
Head Cover
LED Light
Probe
Spindle
Clamp Tighten Handle
Clamp
Clamp Fixing Lever
Chip Tray


USB Hub
USB Communication Port
Power Port (24V)



Miracle A-9 LCD screen angle is adjustable as you desire.

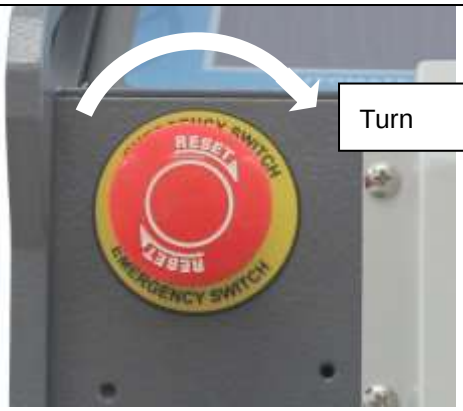
경고

- **LCD may get damaged by impact or heavy objects.**
  Never give impact to LCD screen or put heavy objects on it.
- **Sensing probe is a consumable and easy to break.**
- **When the sensing probe is bent, a measurement error may occur.**
  For this reason, the probe is designed to get broken when the force strong enough to bend the probe is applied.
- **Take cautions not to drop or give impacts to the sensing probe.**
- **REDT is not responsible for the broken probe in any cases.**

Power

Power Switch

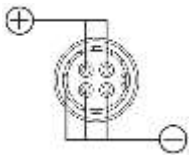
Power On



Power Off

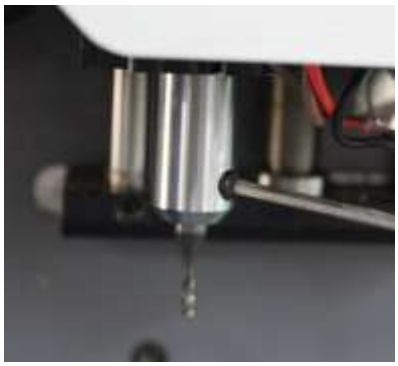
Connect the power adaptor. Turn the switch to clockwise to power on and press it to power off.

Specification

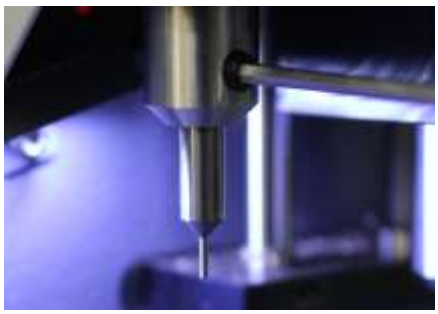
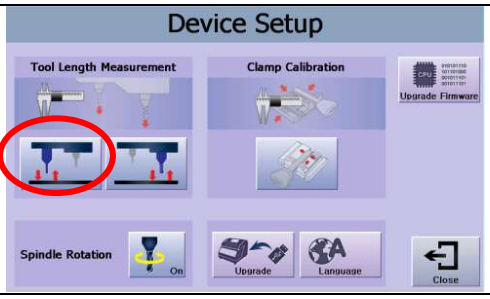
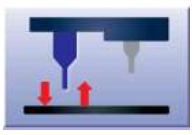
Power Input		24vDC / Minimum 6.25A 
Power Consumption		120W
Dimension		255 (W)×360 (H)×340 (D)mm
Weight		24kg
Resolution		XY Axis: 0.005mm, Z Axis: 0.0015mm
Spindle Revolution		18,000 rpm
Bluetooth	Spec.	Bluetooth Specification V1.2
	Frequency	2.4GHz ISM Band
	Profile	SPP, GAP
Temperature		0 - 40 ºC
Humidity		10 - 90 %
Usage		Automobile key cutting

Replacement of Consumables

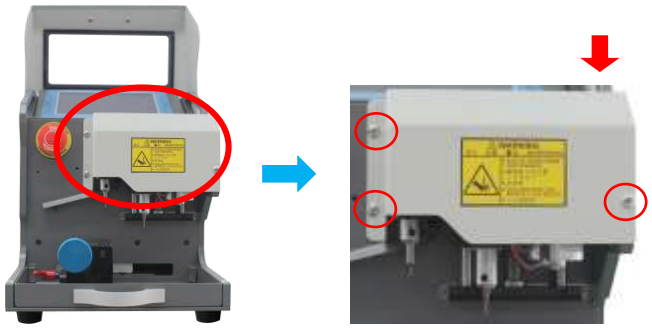
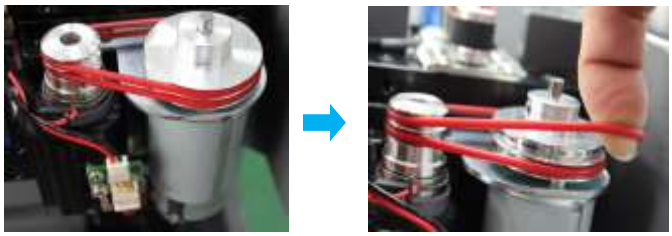
➢ Cutter

	Loosen the bolt by T-wrench to replace the Cutter.
	Press to go to the setting page
	Press and measure the Cutter length.

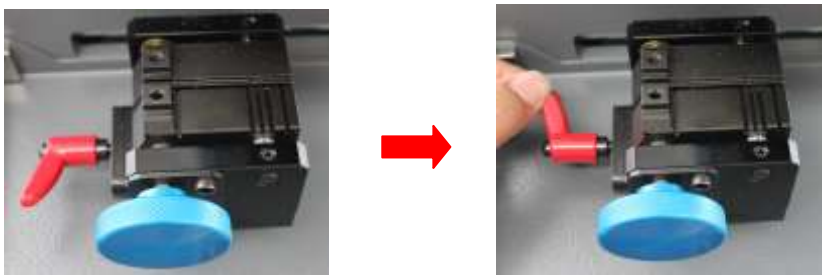
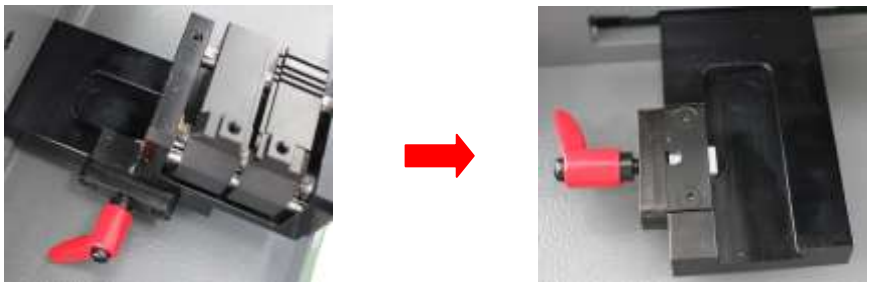
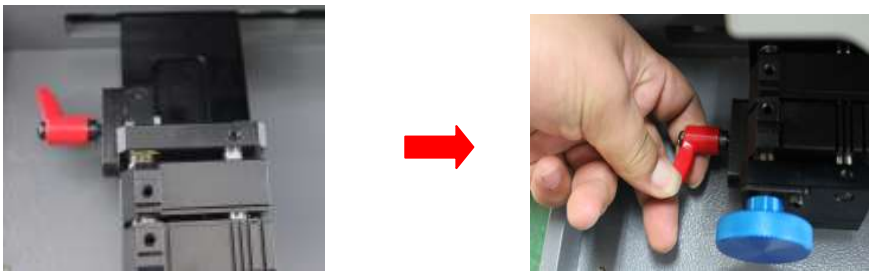
➢ Probe

	Loosen the bolt by T-wrench to replace the probe.
	Press  and measure the Probe length.

➢ Belt

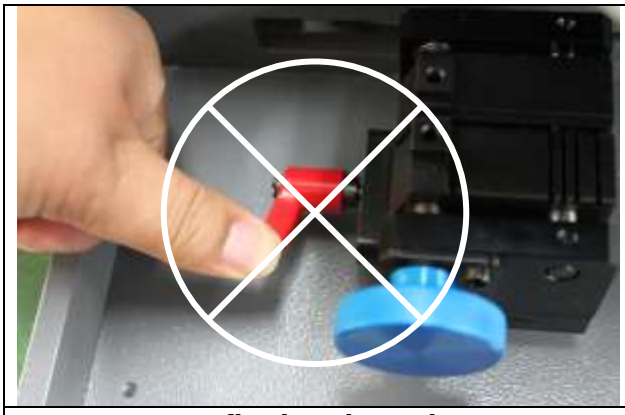
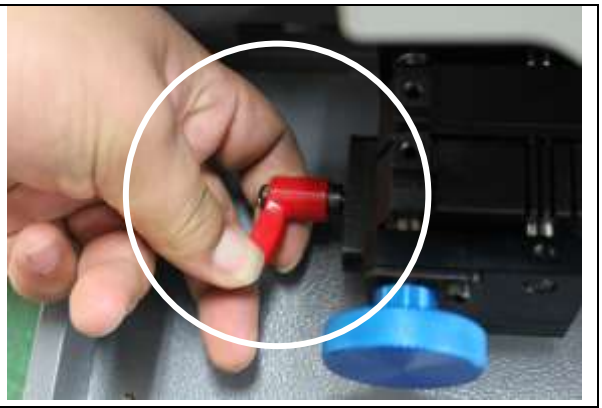
	1. Loosen the bolts on the front cover to remove the cover.
	2. Remove the existing belt and replace it with the new belt.

➢ Clamp

	1. Loosen the clamp fixing lever.
	2. Detach the clamp.
	3. Align the clamp to the groove and push it back. And fasten the clamp fixing lever.

Cautions in Vise Replacement

When you fix the clamp by pressing the lever, the clamp origin may be changed or the clamp may get shaken. Make sure to turn the lever to fix the clamp.

	
Never fix the clamp by pressing	**Make sure to fix the clamp by turing**

You can manufacture various kinds of keys by replacing the clamp based on the key type.

Dimple Key Clamp	**Round Key Clamp (Vending Machine Key)**

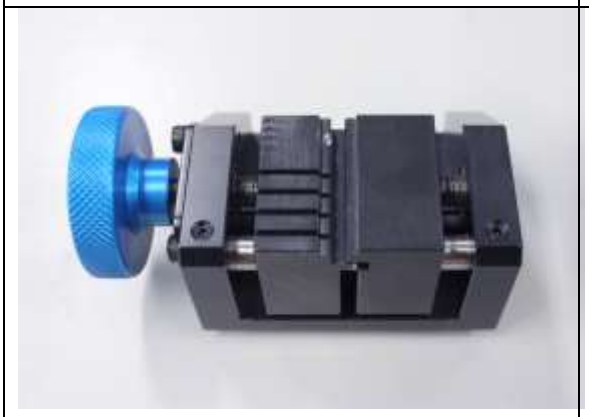
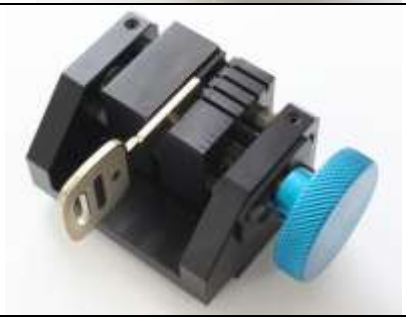



Figure of Key Fixation	
	For the round key, place the key on V-groove and turn the clamp lever to fix the key.

Tibbe Clamp

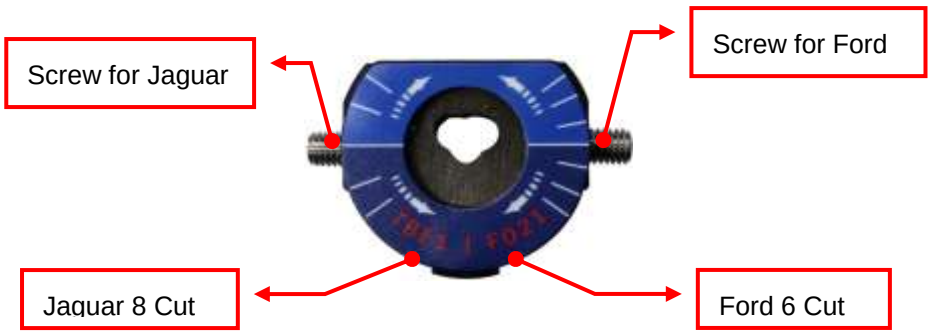
Tibbe clamp enables both Ford and Jaguar key cutting with MIRACLE-A9.

☞ ***Tibbe clamp is optional part. So it's not included in the product package.***

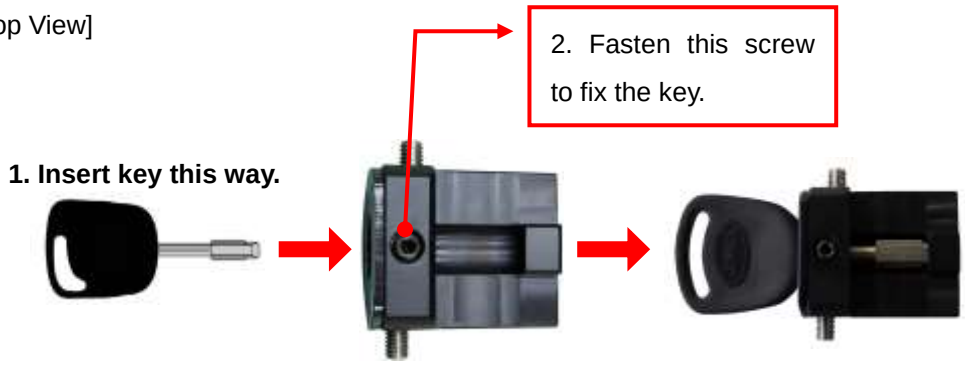
How to Use :

Loosen screw at Jaguar side and fasten screw at Ford. Not all the way through, until you feel the ball bearing engage. Repeat the opposite for Jaguar 8 cut.

[Front View]



[Top View]



Place the clamp on the main clamp.

Follow guide on the LCD Screen.

LDV(FO19) Clamp

LDV(FO19) clamp enables LDV key cutting with MIRACLE-A5.

☞***LDV(FO19) clamp is optional part. It's not included in the product package.***

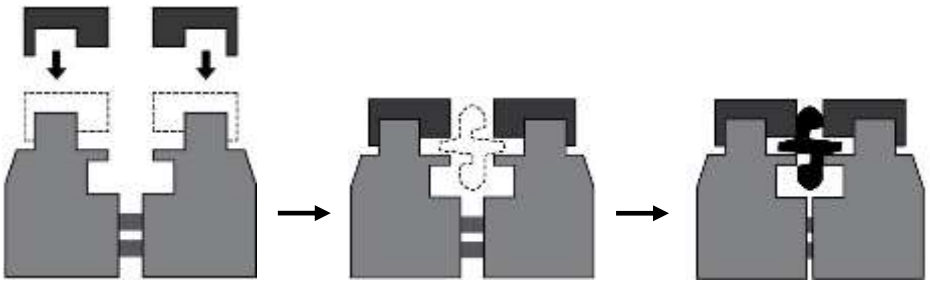
Place the clamp on the main clamp.

Follow guide on the LCD Screen.

SX9 Clamp

Auxiliary clamp enables easy SX9 key (Side A) and thin standard(edge) key holding.

SX9 Key Holding



Key fixation

Miracle-A9 is a key cutting machine to manufacture the vehicle key, as well as various kinds of keys. It provides the vise and stopper to fix various kinds of keys easily and quickly. The key fixing method is as follows.

Top and Bottom Clamp:

Key can be held on top or bottom of clamp depending on the type of key. Edge or double sided non laser keys are always held on top clamp. Laser key can be held on either, but using bottom clamp is recommended.

Fixing a Key on Top Clamp: (Mostly Edge or Double-Sided Non Laser Keys)

Fixing a Key on Bottom Clamp: (Mostly Laser Keys)

Stopper

Stopper shown in the left figure is used to align key correctly. Insert the stopper into proper groove. Then place a key making its shoulder or tip touch this stopper.

[Shoulder Align] [Tip Align]

Use Right-to-Left Stopper Block to hold laser key with short length.

[Tip Align for Right-to-Left]

◈ **Flat Key** (Double-Sided Key)

◈

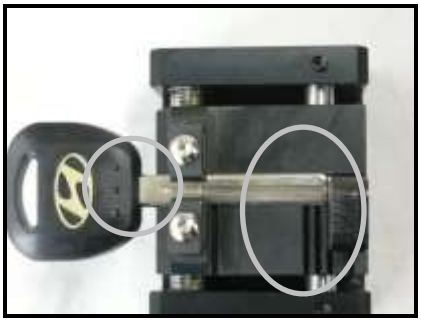
1. Put the stopper in the stop of Shoulder Align Stop.

2. Place the key shoulder to touch the stopper and fasten the clamp tighten handle to fix the key.

Cross Section of Double-Sided Key Fixed

Laser Key

1. Put the stopper in the stop of Tip Align Stop. (Follow the instruction displayed on the machine LCD for the proper stop.)



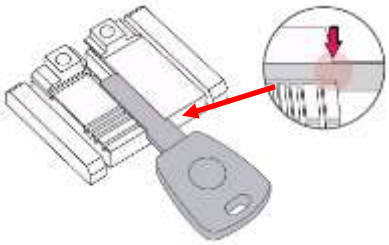
2. Place the end of the key to touch the stopper and fasten the clamp tighten handle to fix the key.

Cross Section of Laser Key Fixed

*** You can fix the laser key turning the opposite side. ***

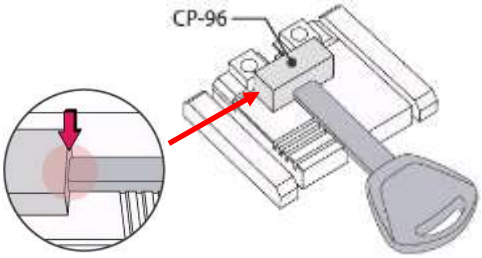
Shoulder Align Key

* Display on LCD Screen



Tip Align Key

* Display on LCD Screen

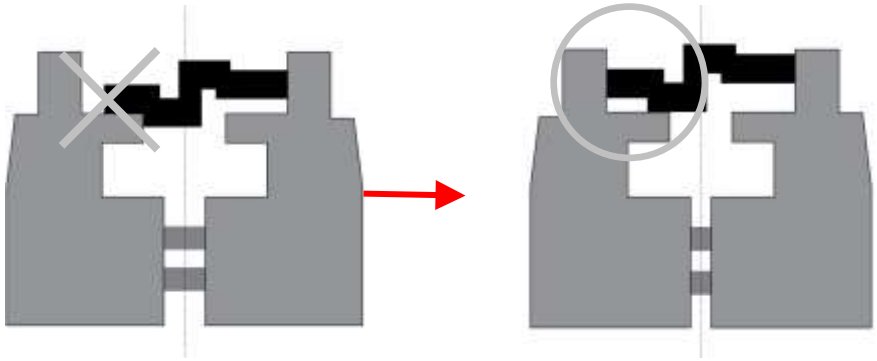


In case of fixing the key on the opposite direction, another stopper is necessary.

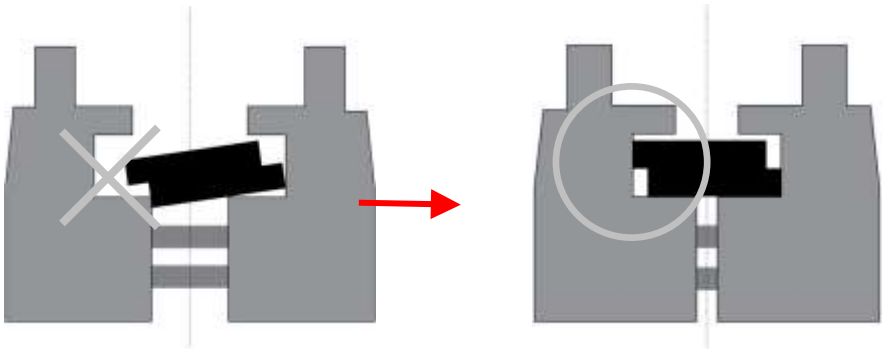
Cautions for Key Fixation

Take cautions not to make the following mistakes when fixing the key.

Standard (Edge) Key



Laser Key

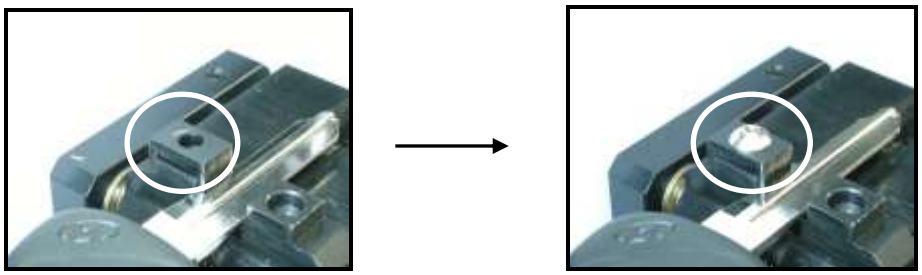


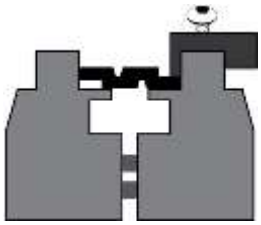
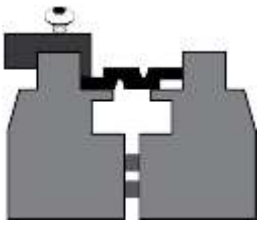
Auxiliary Clamp

*** Use the auxiliary clamp only when it is absolutely necessary. If you use it incorrectly, the center may get changed.**

1. Fix the vehicle key on the clamp.

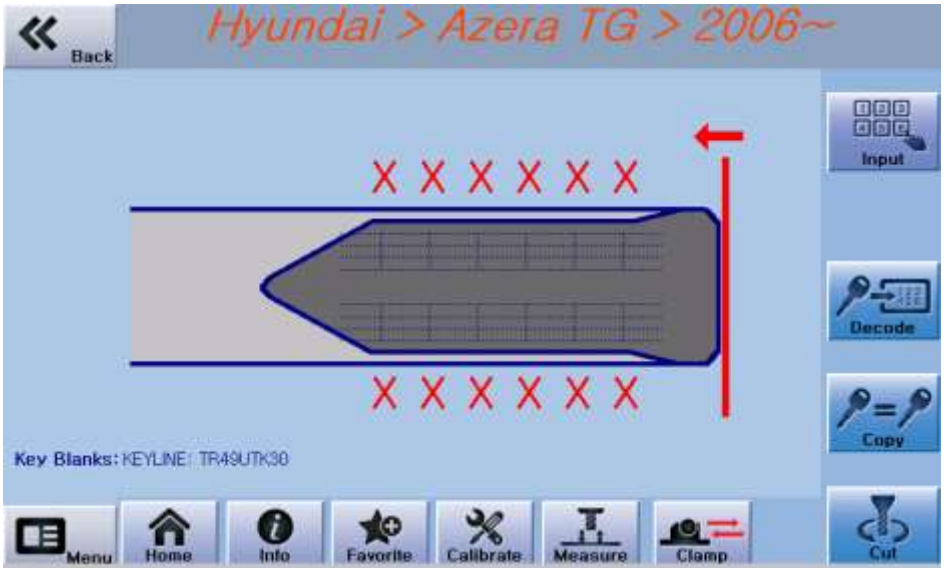
2. Insert the auxiliary clamp for key fixation into the shallow groove of the vehicle key for fixation.

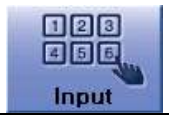


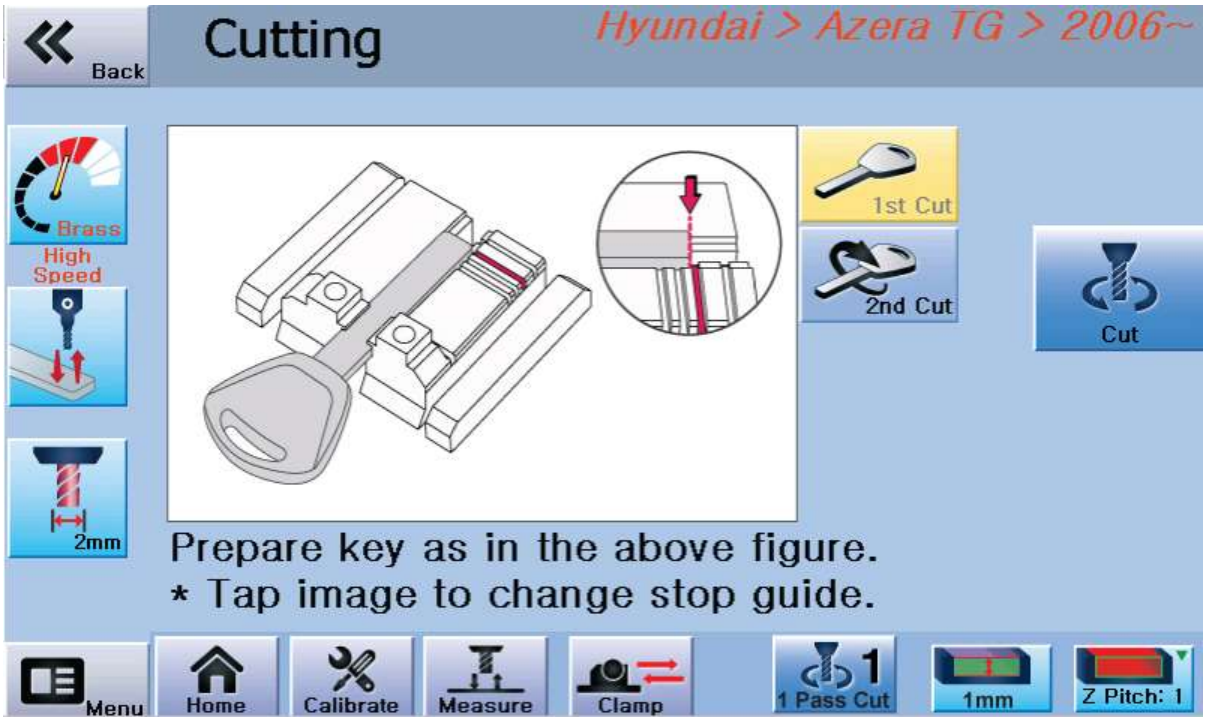
 When the right groove is shallow]	 [When the left groove is shallow]

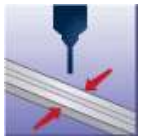
Standard Menu

	Vehicle key manufacturing		Key Data Search
	Motorcycle Key Manufacturing		Previous Key Data
	Standard Key Manufacturing		Key Manufacturing List View
	Dimple Key Manufacturing		Favorite Key Data
	Round Key Manufacturing (Vending Machine)		Setting
	Barcode Use		



	Pin Number Input
	Pin Number Read
	Key Copying
	Key Manufacturing
	Menu **(When you press the icon, the hidden menu appears.)**
	Return to Home
	Detailed Key Data View
	Frequently Used Key Data Registration
	Vise Origin and Tool Repair
	Tool Height Measure
	Clamp Move



Speed Setting	4 levels of manufacturing speed are provided: Low-Normal-High-Highest, depending on the material strength.
Tool Thickness Setting	You can set the thickness from minimum 1.5mm to maximum 2.5mm, depending on the tool.
Laser key Height Auto-Measurement	Key height is automatically measured for the earthworm key manufacturing to prevent the clamp damage.
 Double-Sided Key Width Auto-Measurement	Key width is automatically measured for the double-sided key manufacturing to offset the material error. (It only applies to the shoulder-align double-sided key.)
1 Pass cut	Key manufacturing is complete in 1 pass cut. (It is used when the manufacturing key is not completely done.)
Depth Differentiation	This icon appears for the earthworm key manufacturing. You can make up to 3 cuts with different depth.
Depth Adjustment	Cutting depth is manually adjustable for the earthworm key manufacturing.

Convenient Function

Data Search

e.g.) HU66 (Audi A4, A5)

You can search and read data by the key type.

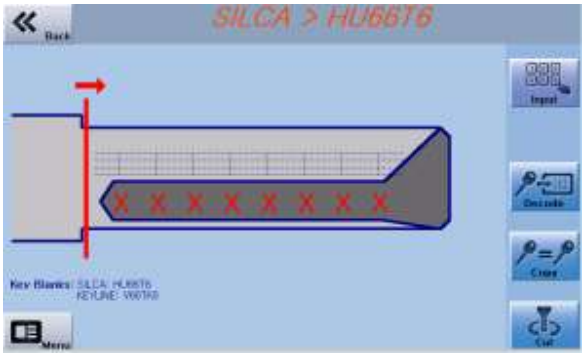
1. Press

in the first page.

2. Enter the key name.

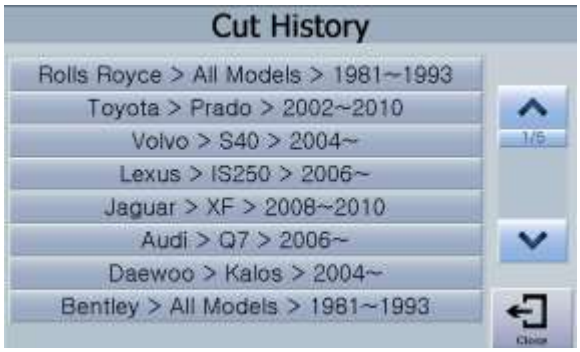
3. Press

.



4. Enter the pin number and start manufacturing.

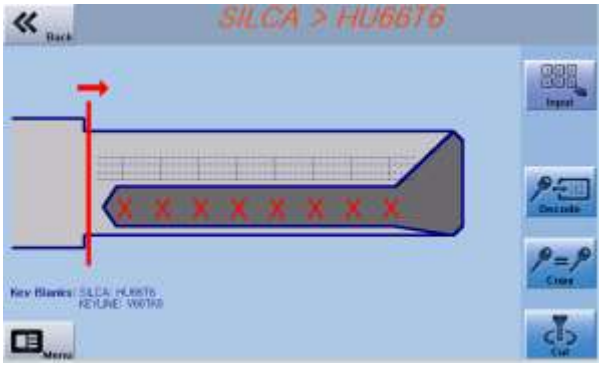
History Key Manufacturing List View

	You can check the manufactured key list.

Favorite Favorite

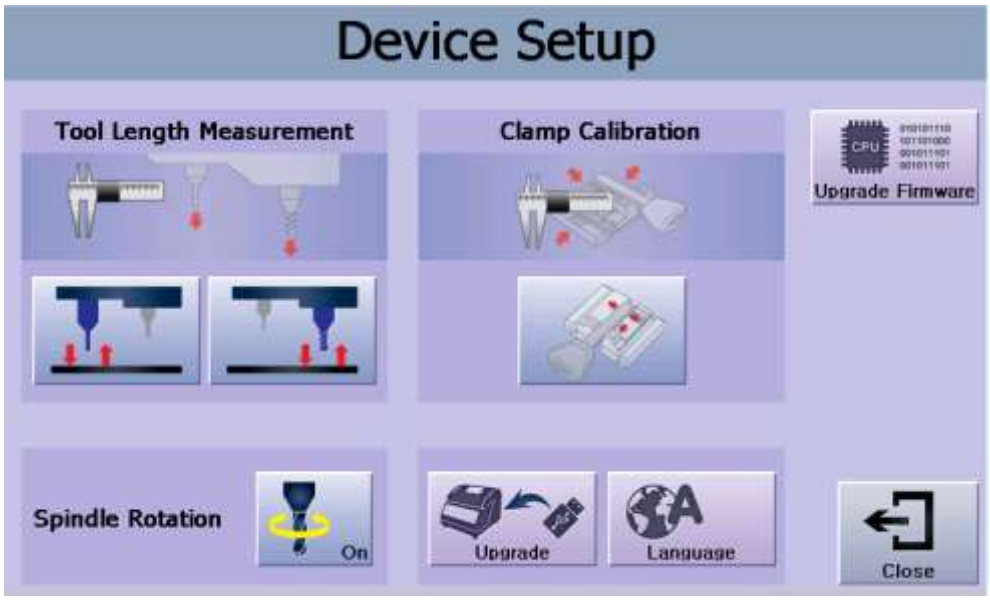
	You can register key data in Favorite and read the data in the initial page.

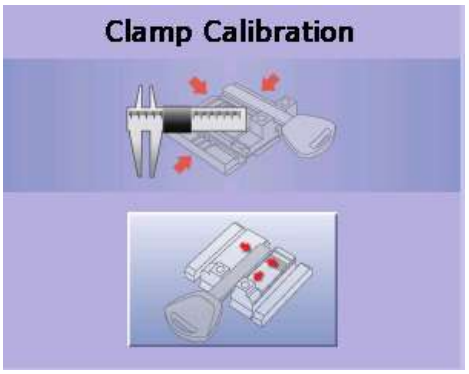
Last Key Previous

	You can read previous key data for reworking.

Setting Menu

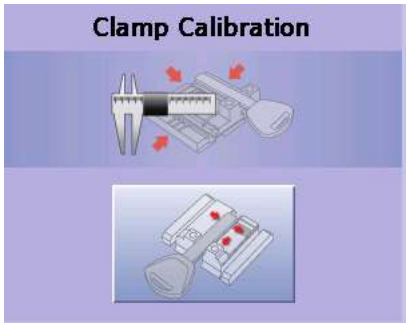
Setting



	Tool Height Measurement (After Replacing Tool)		Spindle Rotation Check
	Data Upgrade		Language Setting
	Software Upgrade		Auto Clamp Calibration (Refer to Page 27)

Clamp Calibration

Automatic Setting of Clamp Origin



(*In Miracle-A9, you should set up the probe origin and the cutter origin respectively. For the clamp origin setting, replace the tool to the probe first and then set up the origin.)

1. Remove the cutter and replace it with the probe.	
2. Fix the accurate key material **on the clamp**.	
	If you press the icon in the picture, the **probe** origin is automatically done.
	If you press the icon in the picture, the **cutter** origin is automatically done.

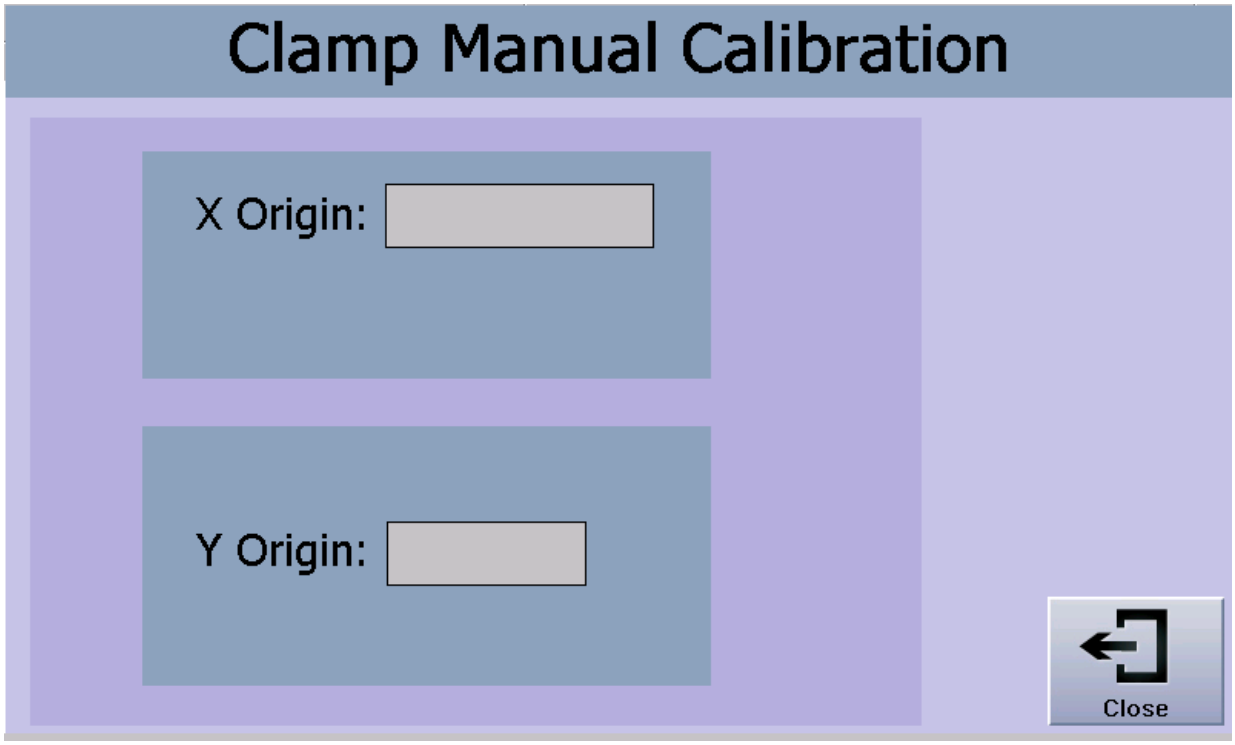
Make sure to make a note of X & Y origin values after changes. It will make maintenance easy.

Checking Calibration Value

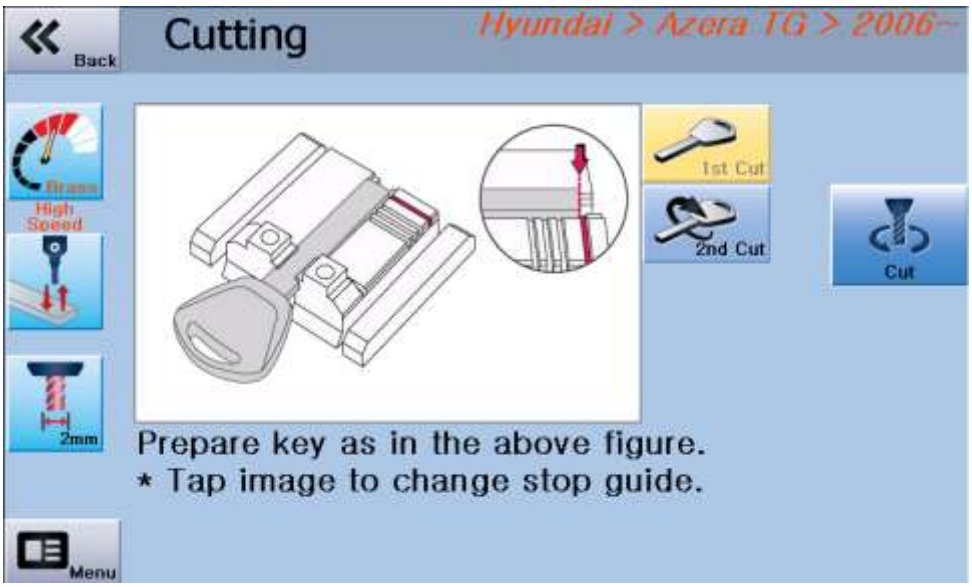
Each machine will have its unique calibration value after the above calibration process.

It can be checked press the

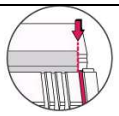
icon.

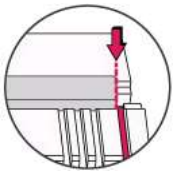
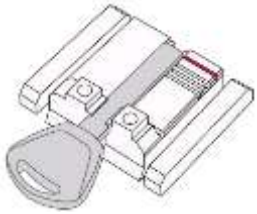
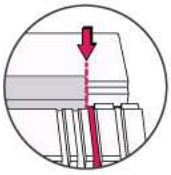
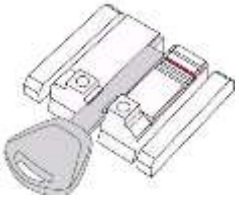
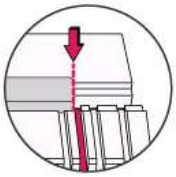
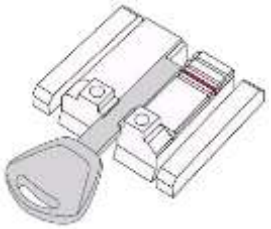
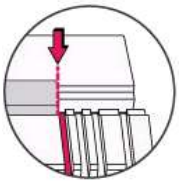
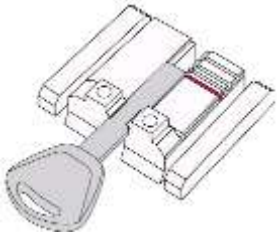
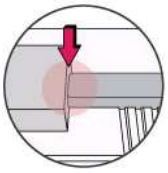
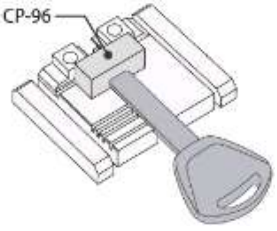


Clamp Reference Point Change



Clamp reference point can be changed by the key material as shown in the picture.

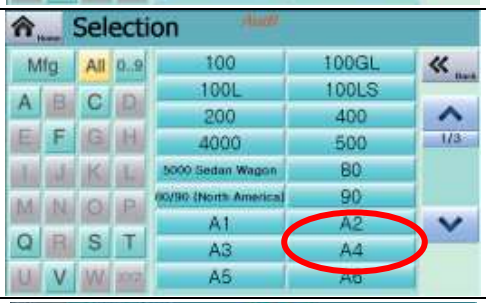
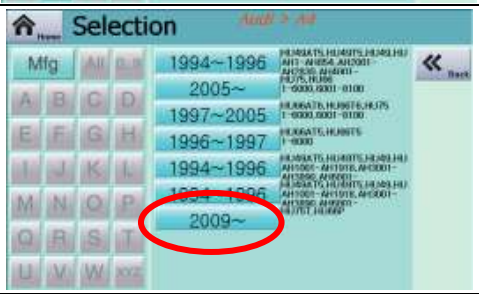
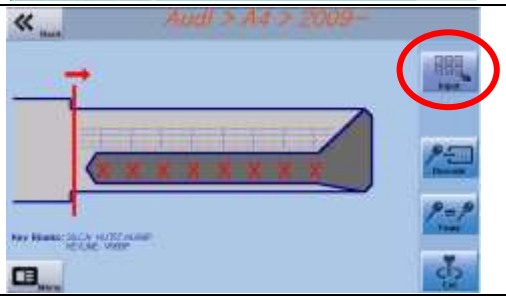

When you press the icon, the reference point is changed as the below order.

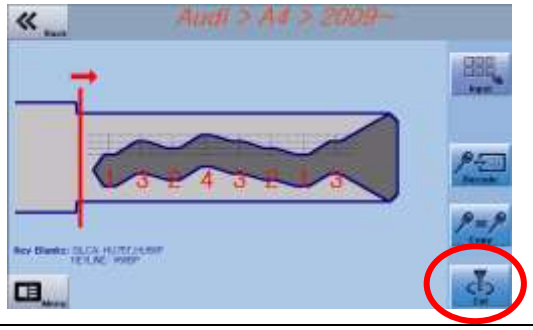
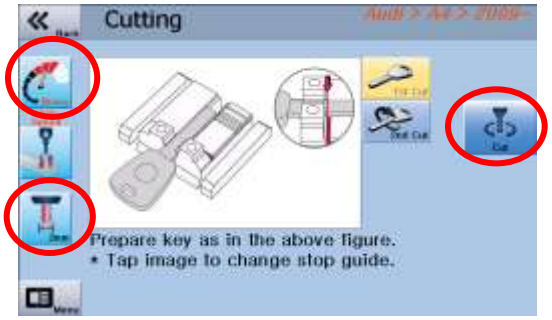
1		
2		
3		
4		
5		 If you want to fix the key on the opposite direction, another stopper is necessary.

Key Manufacturing Order

◆ Vehicle Key

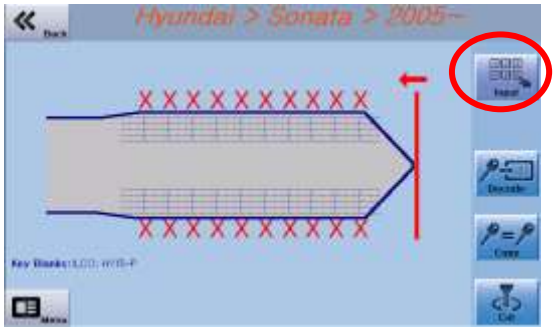
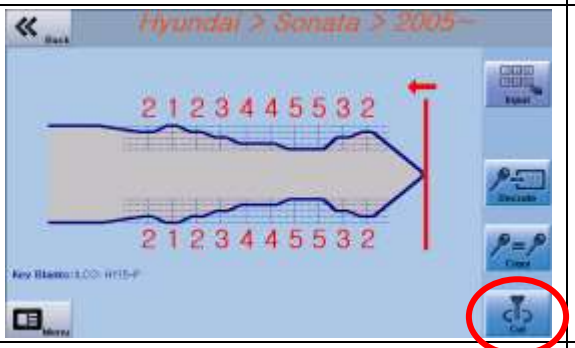
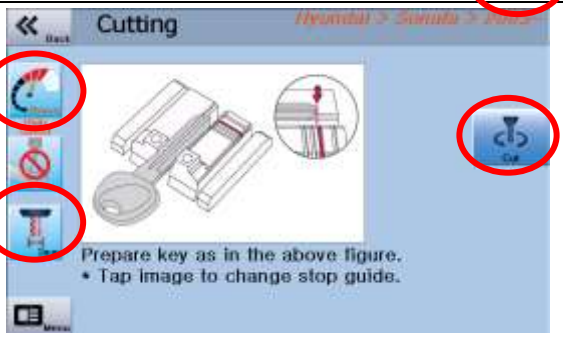
e.g.) Audi - A4

1,		Press the vehicle key icon in the initial page to open the manufacturer list.
2.		Select **“Audi”** in the list.
3.		Select **“A4”** in the vehicle list.
4.		Select the vehicle manufactured year.
5.		Press on the upper right side.
6.		Enter the pin number and press .

7.		Check the pin number and press on the lower right side.
8.		Fix the key on the clamp as shown in the screen. **(Refer to Key Fixation)** Check speed and tool thickness and press .

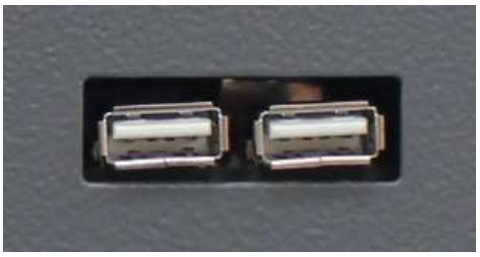
e.g.) Hyundai – Sonata (2005~)

1,		Press the vehicle key icon in the initial page to open the manufacturer list.
2.		Select **"Hyundai"** in the list.
3.		Select **"Sonata"** in the vehicle list.
4.		Select the vehicle manufactured year.

4.		Press on the upper right side.
5.		Enter the pin number in order and press .
6.		Check the pin number and press on the lower right side.
7.		Fix the key on the clamp as shown in the screen. **(Refer to Key Fixation)** Check speed and tool thickness and press .

Program and Data Upgrade

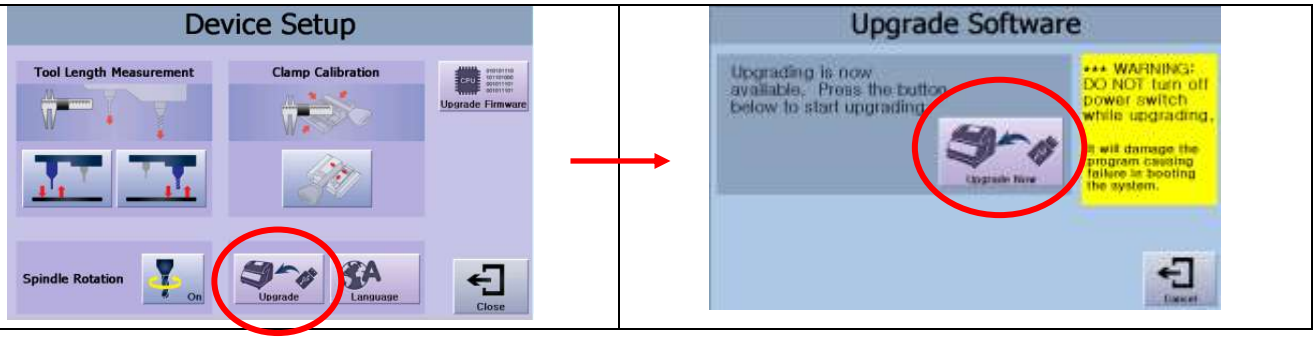
You can save new key data and firmware in USB memory and insert it into the USB hub on the back of the machine for program and data upgrade.



Turn on power and insert the memory into the USB hub at the back of the machine.

You can upgrade program and data by pressing the icon in the following order.

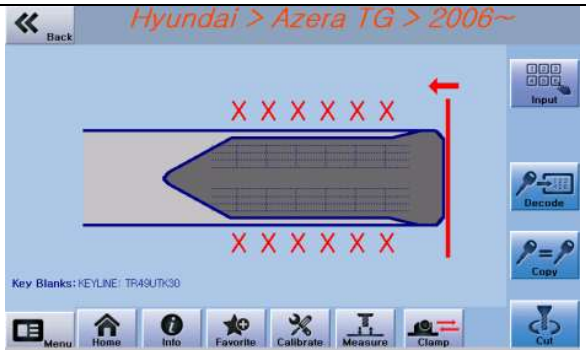
Data Upgrade



Firmware Upgrade

Key Data Read by Barcode Scanner

You can read vehicle data easily without additional operation when you scan the barcode attached on the key material.

1.		Press Barcode button in the initial page.
2.		Place the barcode under the scanner line as shown in the picture. **(The longer the barcode length is, the farther the distance to the scanner.)**
3.		When the barcode is scanned, the scanned number appears on the LCD screen.
4.		When the key data appears on the screen, start the key manufacturing.

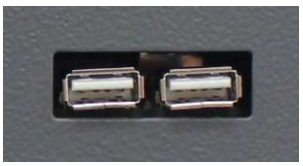
➢ Caution

When the barcode length is over 60mm, scanning is unavailable. The shorter the barcode length is the closer the distance to the scanner.

e.g.) 55mm Barcode

Slightly tilt the barcode sticker downward as shown in the picture to align it to the barcode line.

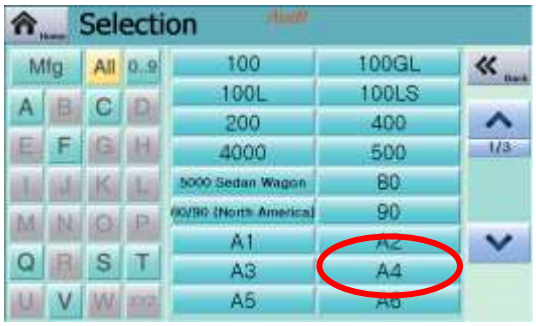
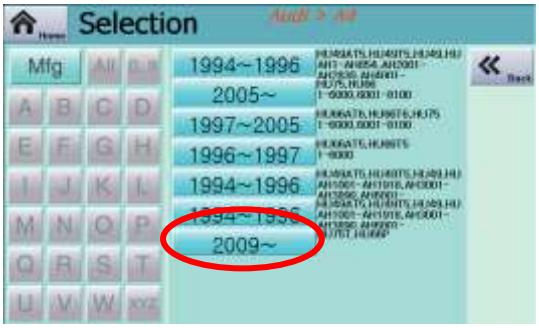
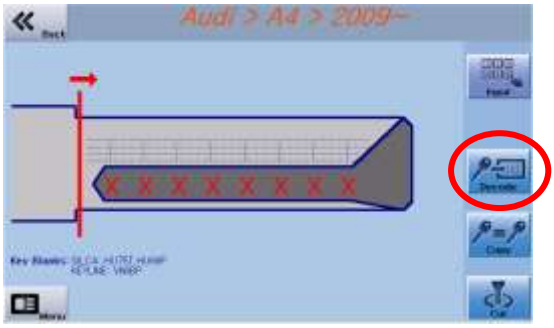
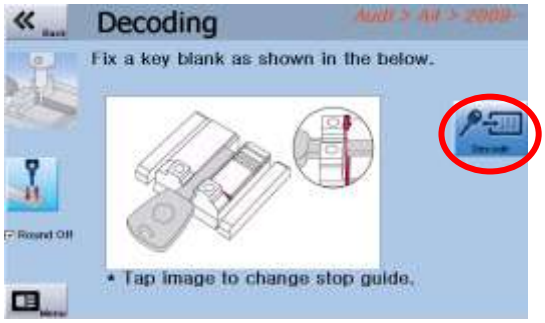
Tip) You can scan the barcode using the built-in scanner or another scanner by USB connection. When you use another scanner, you can scan the barcode longer than 60mm.

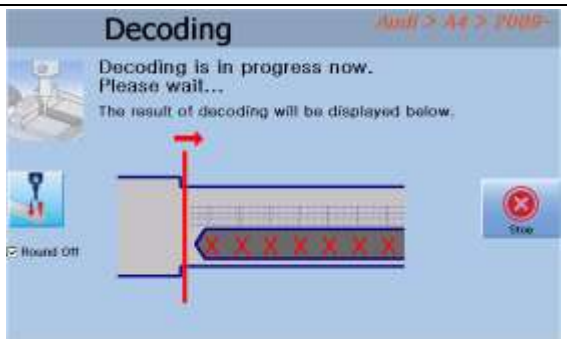
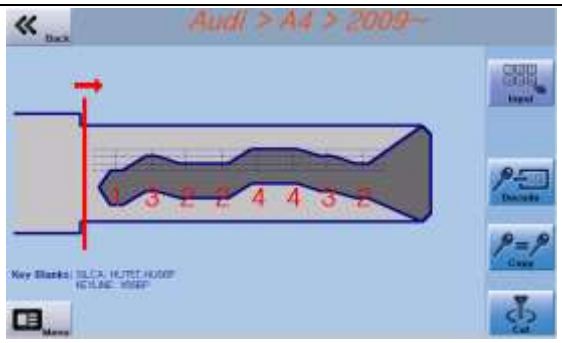


USB hub to connect another scanner

Decoding and Key Copying

e.g.) Audi A4

1.		Press the vehicle key icon in the initial page to open the manufacturer list.
2.		Select **“Audi”** in the list.
3.		Select **“A4”** in the vehicle model list.
4.		Select the vehicle manufactured year.
5.		Press on the right.
6.		Fix the key on the clamp as shown in the picture **(refer to Key Fixation)** and press .

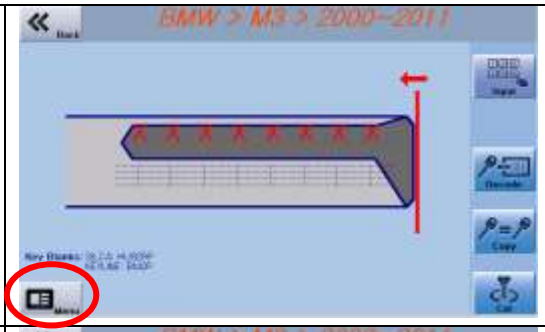
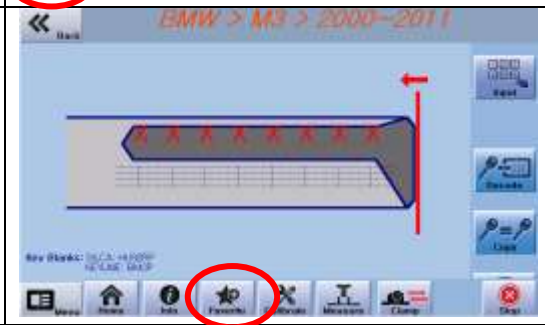
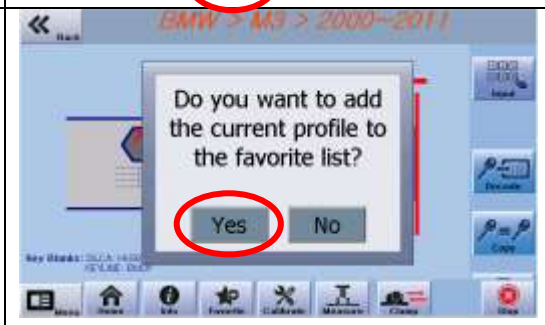
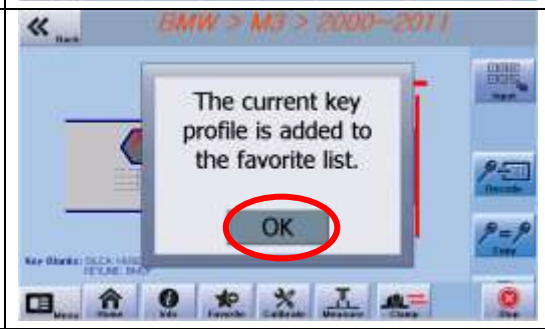
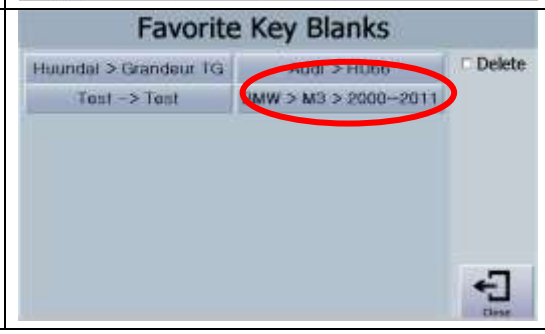
7.	  When decoding is complete, the pin number appears on the screen.
8.	Press and start key manufacturing.

경고

• Sensing probe is a consumable and easy to break.
• When the sensing probe is bent, a measurement error may occur.
For this reason, the probe is designed to get broken when the force strong enough to bend the probe is applied.
• Take cautions not to drop or give impacts to the sensing probe.
• REDT is not responsible for the broken probe in any cases.

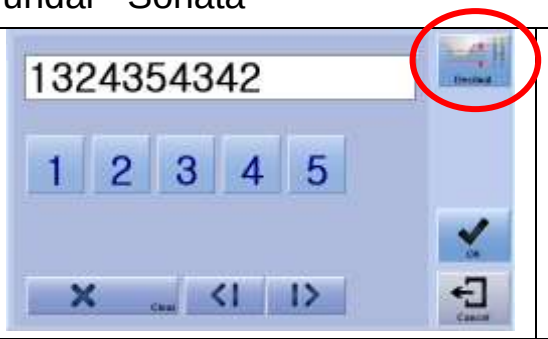
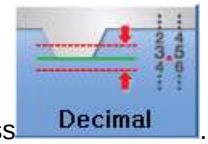
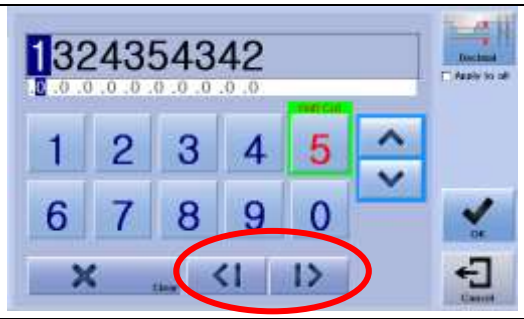
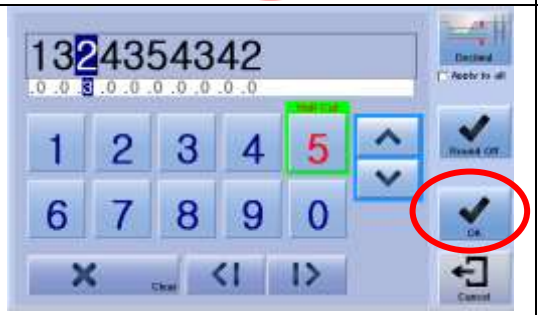
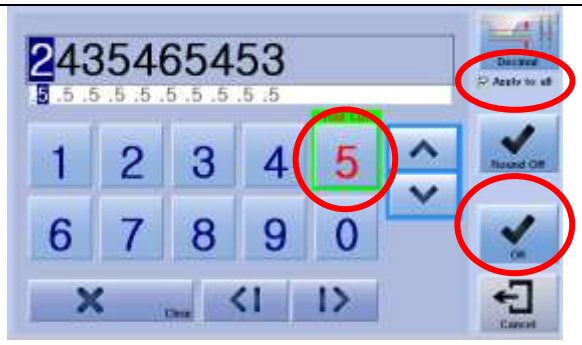
Frequently Used Key Registration

e.g.) BMW – M3

1.		Open the key data for registration and press on the lower left side.
2.		Press in the menu at the bottom of the screen.
3.		Press in the box.
4.		Press in the box.
5.		Press in the initial page.
6.		Press Favorite to check the registered key data.

Bitting Adjust

e.g.) Hyundai - Sonata

1.		Enter the pin height and press  .
2.		Move to the pin position that you want to add or delete using button and enter the decimal point desired to adjust..
3.		e.g.) **Change** the third pin number “**2” into “2.3”** and press .
Half-Cut of Entire Pin .		
	Enter the pin number and make a check in on the right and press . 0.5 is applied to all pin numbers.	

Key Type Description Rule of Imported

In Miracle-A5, imported vehicles are described based on the key material of the actual vehicle. The below is a simple description rule for imported vehicles.
-- Name -------------------------
xxxxxxxx.yyy

xxxxxxxx: Key Material Name of Actual Vehicle
yyy: Key Type
---
1. Double-Sided Flat Key (Edge Key)
e.g.) CY22.D7

CY22: Actual Vehicle Key Material Name
D: Double-Sided Flat Key (Edge Key)
7: Pin Number

2. Single-Sided Flat Key (Edge Key)
e.g.) GM5.S6

GM5: Actual Vehicle Key Material Name
S: Single-Sided Flat Key (Edge Key)
6: Pin Number

3. Laser 4 Track (Grandeur TG)
e.g.) TOY40.INS

TOY40: Actual Vehicle Key Material Name
INS: 2 Track Laser Key Type Display

4. Laser (Earthworm) 2 Track
e.g.) HU56.2TR
HU56: Actual Vehicle Key Material Name
2TR: 2 Track Laser Key Type Display

5. Laser Outside
e.g.) HON66.OUT

HON66: Actual Vehicle Key Material Name
OUT: 2 Track Laser Key Type Display

6. Laser 2 Track (So called Trail Type)
e.g.) HU66.2RT

HU66: Actual Vehicle Key Material Name
2RT: 2 Track Laser Key Type Display

Summary:
D#: Double-Sided Flat Key (# indicates Pin Number)
S#: Single-Sided Flat Key (# indicates Pin Number)
INS: Laser 4 Track (Hyundai Grandeur TG)
2TR: Laser 2 Track (Daewoo Prince)
OUT: Laser Outside (Honda HON66)
2RT: Laser Trail Type (Audi HU66)

\

RED TECHNOLOGY
3F, 1314 GwanPyeong-dong Yuseong-gu
Daejeon, Republic of Korea, 306-801
TEL:+82-70-7011-0905 FAX: +82-42-673-0905
Copyright© 2005-2012 RED TECHNOLOGY.

Warranty

Product: Desktop CNC Cutter

Model: Miracle-A9

The manufacturer's warranty lasts for 12 months from the purchase date and the below is the warranty details.

Warranty Details

1. Warranted Product: Miracle-A9
2. Warranty Period: 12 months from the purchase date. However, if it is unable to confirm the purchase date, 13 months from the manufactured date is the warranty period.
3. Paid Service during Warranty Period
   ① Product breakdown caused by natural disaster (fire, salt damage, gas, earthquake, storm and flood damage)
   ② Replacement of consumables that naturally wear out
   ③ Product breakdown caused by power failure and poor connecting device
   ④ Product breakdown caused by exterior factors, not by the product itself
   ⑤ Product breakdown caused by repairing or remodeling by other personnel, not by RED Technology engineer
   ⑥ Product breakdown caused by intentional or accidental mistakes of customers
4. Free Service
   ① In case of product breakdown caused by other factors than the factors described in the paid service section during the above mentioned warranty period
5. Shipping in case of Product Breakdown
   ① In principle, the product should be shipped to RED Technology for repair
   ② During the free A/S period, the product shipping cost shall be paid by RED Technology.
   ③ After the free A/S period, the product shipping cost shall be paid by the customer.
   ④ The shipping cost of product without defect shall be imposed to the customer.
6. RED Technology is exempted from all obligations and accountabilities for the product sold to other countries without a clear export contract with the company.
7. For the matters unstated in this Warranty, 『Consumer Injury Compensation Rule』 shall be observed.

RED Technolog

1314 3F Gwanpyeong-dong Yusung-gu Daejeon-si
Customer Service Phone: 1599-5042 Fax: 042-673-0905
Homepage: www.iredt.com

Customer Information	Model: Purchase Date: Name: Business: Address: Phone:	Dealer Information	Name: Business: Address: Phone: